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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/086,986	03/01/2002	Gerard O'Driscoll	TD-166	6316

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GROOVER & HOLMES  
BOX 802889  
DALLAS, TX 75380-2889

EXAMINER

CASCHERA, ANTONIO A

ART UNIT PAPER NUMBER

2676

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/086,986

Applicant(s)

O'DRISCOLL, GERARD

Examiner

Antonio A. Caschera

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3 and 5-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 22 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Claim Rejections - 35 USC § 102*

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. Claims 1-3, 5-10, 13-17, 19, 20, 22-26, 28 and 29 are rejected under 35 U.S.C. 102(e) as being anticipated by Millet et al. (U.S. Patent 6,791,569 B1).

In reference to claims 1, 5, 13, 19, 22 and 28, Millet et al. discloses a method for creating antialiased lines using barycentric coordinates (see column 2, lines 46-48). Millet et al. discloses determining the orientation of a line by calculating the slope of the line and classifying the line by minor axis based upon the slope of the line (see column 3, lines 38-45). Millet et al. then discloses calculating a minor axis distance measured from a sample point in the minor axis direction (see column 3, lines 45-47). Millet et al. further discloses using the minor axis distance values to determine coverage values (see column 3, lines 60-61). Millet et al. discloses calculating the coverage values by calculating barycentric coordinates based upon the vertices of a triangle created between the two endpoints of the line and a third calculated endpoint (see column 4, lines 1-44 and column 5, lines 2-4 and 11-14). Millet et al. also discloses the calculated endpoint being based upon the orientation of the line (see column 5, lines 14-18 and Figure 5). Millet et al. explicitly discloses such computations as “subarea” calculations and

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therefore the Office interprets such antialiasing methods Millet et al. to perform subpixel sampling. Note, the Office interprets that the barycentric triangles, made up of the barycentric coordinates (see Figures 4 and 5), are functionally equivalent to the sampling patterns of Applicant's claims since these barycentric triangles, and inherently their coordinates, are different and dependent upon the orientation of the line because one of the vertices of the triangles is the calculated endpoint which, its coordinate location, is directly dependent upon line orientation (see column 5, lines 11-18 and Figure 5). In reference to claims 5, 19 and 28, the Office interprets Millet et al. to inherently calculate in which direction the line is most nearly parallel to when Millet et al. discloses the slope of the line. Also, since the barycentric triangles are dependent upon the orientation of the line, the Office interprets that these triangles inherently provide maximal resolution approximately normal to the orientation of the line. In reference to claims 13 and 19, Millet et al. also discloses a graphics subsystem performing the above antialiasing methods along with other graphics processing (see column 7, lines 5-22).

In reference to claims 2, 14 and 23, Millet et al. discloses all of the claim limitations as applied to claims 1, 13 and 22 respectively above. Millet et al. discloses determining the orientation of a line by calculating the slope of the line and classifying the line by minor axis based upon the slope of the line (see column 3, lines 38-45). Note, the Office interprets that Millet et al. inherently discloses classifying the lines in x and y major classes since a line classified in x-minor would inherently be classified in y-major while a line classified in y-minor would inherently be classified in x-major.

In reference to claims 3, 16 and 25, Millet et al. discloses all of the claim limitations as applied to claims 1, 13 and 22 respectively above. Note, the Office interprets that the barycentric

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triangles correspond one-to-one to the orientation classes since these barycentric triangles, and inherently their coordinates, are dependent upon the orientation of the line as one of the vertices of the triangles is the calculated endpoint which, its coordinate location, is directly dependent upon line orientation (see column 5, lines 11-18 and Figure 5).

In reference to claims 6, 20 and 29, Millet et al. discloses all of the claim limitations as applied to claims 5, 19 and 28 respectively above. Millet et al. discloses determining the orientation of a line by calculating the slope of the line and classifying the line by minor axis, in two directions x and y, based upon the slope of the line (see column 3, lines 38-45).

In reference to claims 7 and 8, Millet et al. discloses all of the claim limitations as applied to claims 1 and 5 respectively above. Millet et al. also discloses a graphics subsystem performing the above antialiasing methods along with other graphics processing (see column 7, lines 5-22).

In reference to claims 9, 15 and 24, Millet et al. discloses all of the claim limitations as applied to claims 2, 14 and 23 respectively above. Millet et al. discloses determining the orientation of a line by calculating the slope of the line and classifying the line by minor axis based upon the slope of the line (see column 3, lines 38-45). Note, the Office interprets that Millet et al. inherently discloses classifying the lines in x and y major classes since a line classified in x-minor would inherently be classified in y-major while a line classified in y-minor would inherently be classified in x-major. Further, the extent or degree of the line compared to 0.5 (the slope of a 45° line) decides how the line is classified, in other words, a slope larger than 0.5 would be classified as minor x-axis (or y-major) while a slope smaller than 0.5 would be classified as minor y-axis (or x-major) (see column 3, lines 38-45).

In reference to claims 10, 17 and 26, Millet et al. discloses all of the claim limitations as applied to claims 1, 13 and 22 respectively above. Since Millet et al. discloses utilizing barycentric triangles, these triangles are made up of three vertices, one of the vertices being a sample point (see column 5, lines 11-18 and 31-44 and Figure 5), which the Office interprets as equivalent in either horizontal or vertical sampling directions (horizontal and vertical line orientations).

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 11, 12, 18, 21, 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Millet et al. (U.S. Patent 6,791,569 B1).

In reference to claims 11, 12, 18, 21, 27 and 30, Millet et al. discloses all of the claim limitations as applied to claims 1, 5, 13, 19, 22 and 28 respectively above. Although Millet et al. discloses utilizing one sample point (see #505 of Figure 5), Millet et al. does not explicitly disclose utilizing four sampling points. At the time the invention was made, it would have been obvious to one of ordinary skill in the art to implement additional sampling points with the methods of Millet et al. in order to increase the resolution of coverage for entire line. Applicant has not disclosed that utilizing specifically four sampling points provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore,

would have expected Applicant's invention to perform equally well with the sampling techniques of Millet al. because the exact number of sampling points used in antialiasing is seen as a matter of design choice as preferred by the design and to which best suits the application at hand. Further, the exact number of sampling points is seen as providing no immediate criticality to the invention at hand because, as stated above, the exact number of sampling points decides sampling resolution, which the Office does not see as the primary or major element of the Applicant's invention. Therefore, it would have been obvious to one of ordinary skill in this art to modify Millet et al. to obtain the invention as specified in claims 11, 12, 18, 21, 27 and 30.

### ***Response to Arguments***

3. Applicant's arguments, see page 9 of Applicant's Remarks, filed 04/22/05, with respect to the rejection(s) of claim(s) 1-3 and 5-30 under 35 U.S.C 112 and 102 have been fully considered and are persuasive. Therefore, the 112 rejection has been withdrawn since additional explanations of the invention were discussed in the interview conducted on 04/14/05 along with additional drawings and accompanying text filed in the amendment of 04/22/05. The 35 USC 102 rejection of the claims has also been withdrawn however, upon further consideration, a new ground(s) of rejection is made in view of Millet al.

### ***References Cited***

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure:

- a. Nakayama et al. (U.S. Patent 5,487,142)

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- Nakayama et al. discloses an antialiasing line display apparatus including a line orientation determination steps.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Antonio Caschera whose telephone number is (571) 272-7781. The examiner can normally be reached Monday-Thursday and alternate Fridays between 7:30 AM and 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Matthew Bella, can be reached at (571) 272-7778.

**Any response to this action should be mailed to:**

Commissioner of Patents and Trademarks

Washington, D.C. 20231

**or faxed to:**

**(703) 872-9314 (for Technology Center 2600 only)**

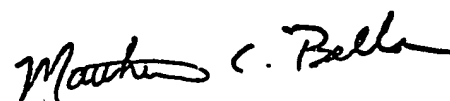
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.



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aac

7/9/05

A handwritten signature in black ink, reading "Matthew C. Bella". The signature is written in a cursive style with a large, stylized "M" and a long, sweeping underline.

MATTHEW C. BELLA  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600



New Sheet

*Ok.  
To Enter  
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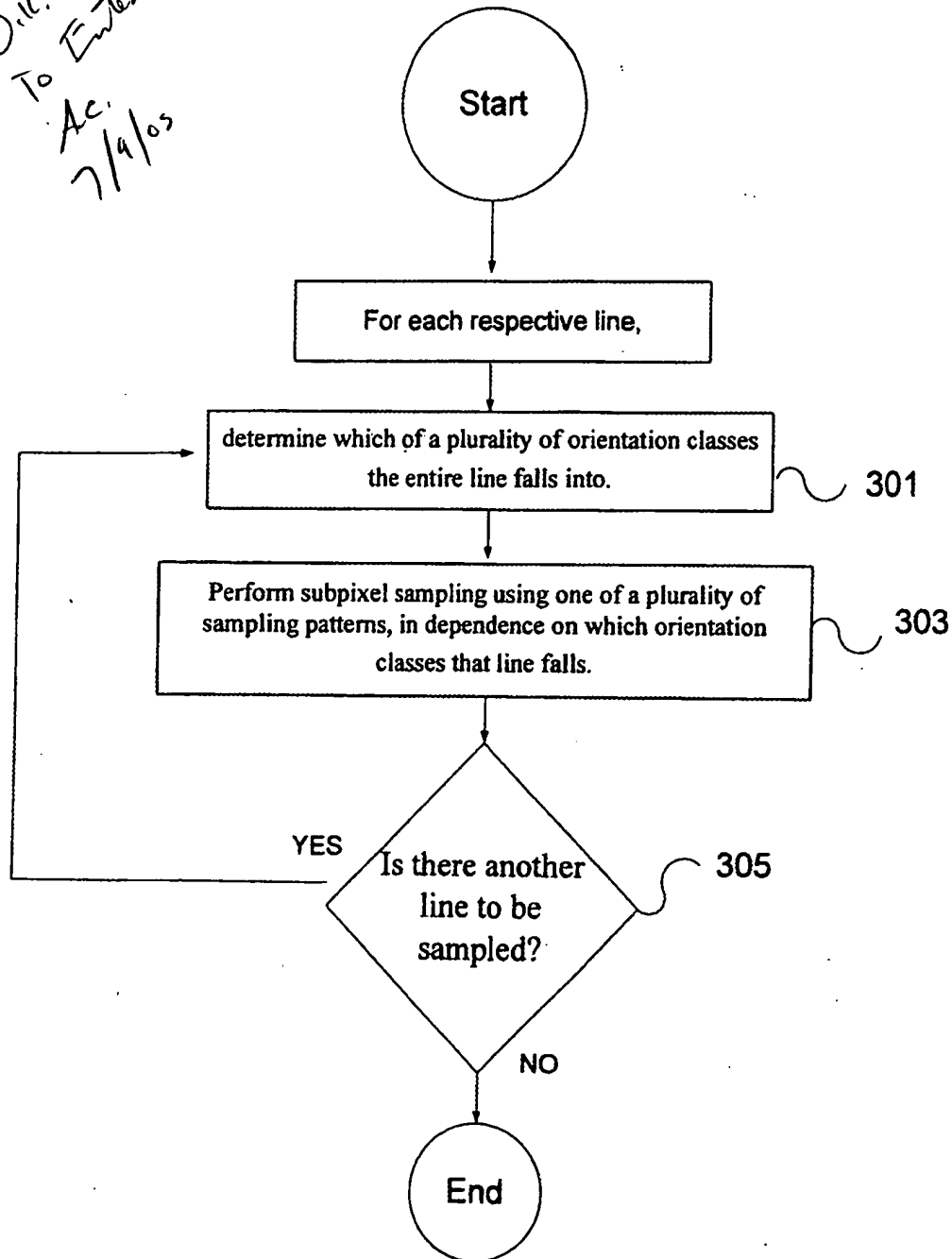


FIG. 3